



Occupational stress and mental health among nurses in a medical intensive care unit of a general hospital in Bandar Abbas in 2013

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Abstract

Background: Many nurses have reported experiencing high levels of occupational stress in their work environment. Stress, as an outcome of stressful workplaces and tasks, affects nursing behavior in hospital wards. The objectives of this research were to determine the prevalence of occupational stress and mental health problems in nurses in the intensive care unit (ICU) at Shahid Mohammadi Hospital in Bandar Abbas in 2013 and to determine the relationship between occupational stress and mental health.

Methods: This cross-sectional study was conducted in 2013 on all of the nurses working in ICU at Shahid Mohammadi Hospital located in Bandar Abbas, Iran. Seventy-two nurses were selected as the population for this study, and all of them were female. Two questionnaires were used in this study, i.e., General Health Questionnaire-28 (GHQ-28) for assessing mental health and an occupational stress test for assessing job stress. Furthermore, the relationship between occupational stress and mental health was examined. One-way analysis of variance (ANOVA), independent samples t-test, and Pearson's product-moment correlation test were used to analyze the data.

Results: High and moderate levels of occupational stress were experienced by 83.9% and 10.7% of ICU nurses, respectively. The prevalence of mental disorders, somatic symptoms, anxiety, social dysfunction, and depression were 58.9, 60.7, 62.5, 71.4, and 10.7%, respectively. The findings of the independent samples t-test showed that somatic symptoms had significant relationships with age and working experience ($p = 0.01$). According to the independent samples t-test, there were no significant differences between somatic symptoms and working different shifts ($p > 0.05$).

Conclusions: There was a high prevalence of occupational stress among ICU nurses. There was a significant relationship between occupational stress and mental health. Future interventions are needed to codify a comprehensive health program in this field to reduce occupational stress and enhance nurses' levels of mental health.

Keywords: occupational stress, mental disorders, ICU nurses

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1. Introduction

Many nurses reported experiencing high levels of occupational stress in their work environment. Stress, as an outcome of stressful workplaces and tasks, has effects on nursing behavior in hospital wards (1, 2). Occupational stress has a significant impact on workers' health and well-being, their quality of life and family life, job satisfaction, turnover, and absences from work (3). It is becoming increasingly difficult to ignore the factors that clearly are important in work-related stress, i.e., including long working hours, the quality of the relationships between hospital workers, poor supervision, poor work environment, and high workload. In addition, the physical environment, including temperature, lighting, and the sound levels in hospitals, has major impacts on the levels of stress in the healthcare staff (2). The prevalence of mental health problems among people in general was estimated to be 14 to 18% (1). However, the results of the General Health Questionnaire (GHQ) among 870 nurses in hospitals in the south of England indicated that 27% of hospital workers had occupational stress and mental health problems (1). The UK Health and Safety Executive (HSE) estimated that work-related stress imposes costs of \$5.4 billion per year on countries (3). The results of a 2011 study by Blaug et al. showed that job dissatisfaction was -high in the hospital nursing staff, and 22% of them wanted to change jobs (3). Nurses in the intensive care unit reported that they experienced more stressful conditions than those involved in other wards of hospitals (4). Higher stress levels lead to increased turnover rates and burnout among this working group. In 2012, Mealer published results that indicated that, among 744 ICU nurses, 18% of them had anxiety symptoms, and 11% had the symptoms of depression. The proportion of ICU nurses experiencing burnout syndrome, emotional exhaustion, depersonalization, and lack of personal accomplishment were 80%, 61%, 44%, and 50%, respectively. The deaths of patients, the provision of futile intensive care, and abusive behavior toward ICU nurses by patients' families may explain these results (4). ICU nurses are exposed to traumatic events in their stressful working environment. The prevalence of post-traumatic stress disorder (PTSD), anxiety, and depression symptoms among ICU nurses (230 subjects) and general nurses (121 subjects) was surveyed using the Diagnostic and Statistical Manual for PTSD and the Hospital Anxiety and Depression Scale. The results showed that 24% of the ICU nurses suffered from post-traumatic stress disorder. There was a significant difference ($p = 0.03$) in the prevalence of PTSD between ICU and general nurses. No significant differences were found in the prevalence of symptoms of depression and anxiety between ICU and general nurses ($p > 0.05$) (5). The prevalence of mental health problems (anxiety and depression) among nurses was high. Excessive workloads, job factors, and organizational factors are the leading causes of mental health problem in nurses (6, 7). The findings of Rahmani et al. showed that, among 63 nurses at Tabriz's Teaching Hospitals, 49.2% of them suffered from occupational stress and 42.4% of them experienced high levels of anxiety (8). However, far too little attention has been directed towards determining the prevalence of occupational stress and mental health problem in ICU nurses in Iran. The objectives of this research were to determine the prevalence of occupational stress and mental health problems in ICU nurses at Bandar Abbas' General Hospital in 2013 and to determine the relationship between occupational stress and mental health.

2. Material and Methods

2.1. Research design and setting

This cross-sectional study was conducted in Shahid Mohammadi Hospital in Bandar Abbas City in 2013. This Hospital was selected because it is the largest Hospital in Hormozgan Province and also because it is a teaching hospital of Hormozgan University of Medical Sciences. The Hospital has the largest ICU in the Province.

2.2. Sampling

The census sampling method was used to determine the prevalence of occupational stress and mental health problems among ICU nurses, because the data were gathered from all of the people employed in ICU. The initial sample consisted of 72 female ICU nurses, 16 of whom did not complete the questionnaires. The participation rate was 77.78%.

2.3. Measurement tool

The 28-item General Health Questionnaire (GHQ-28) was used to characterize the mental health status of the nurses in the ICU because it had already been validated in Iran (9). This questionnaire has four subscales, each of which consists of seven questions related to evaluations of somatic symptoms, anxiety, social dysfunction, and depression (10). A high score indicates a severe mental disorder, and the lower scores can be interpreted as indicating that there is no disorder. In addition, an occupational stress questionnaire designed by Rice (1995) was used to measure job-related stress among the nurses in the ICU (11). This questionnaire has been translated and validated in Iran (12), and it consists of 57 items and three subscales related to the evaluations of interpersonal relationships (26 items), physical conditions (22 items), and job interest (9 items). Work-related stress was rated using a 5-point Likert scale

(11). Occupational stress was categorized into the three levels of low, normal, and high. Demographical features of the nurses in the ICU were gathered with an appropriate form, and these features included age, education level, marital status, work experience, and work schedule.

2.4. Data collection

The data for the study were collected using a questionnaire for the assessment of the mental health status and occupational stress among the nurses in the ICU.

2.5. Ethical consideration

Ethical issues were considered according to the principles for medical research ethics of Hormozgan University of Medical Sciences. To ensure confidentiality, the nurses who participated were not asked to provide their names. All participants signed an informed consent form before their participation in the research was initiated.

2.6. Statistical analyses

Statistical significance was analyzed using one-way analysis of variance (ANOVA), independent samples t-test, and Pearson's product-moment correlation test, as appropriate, by SPSS-16 software (SPSS, Inc., Chicago, IL, USA). The results were considered significant at the $\alpha = 0.05$ level.

3. Results

The ages of the nurses ranged from 23 to 45, with an average of 31.57 and a standard deviation of ± 5.86 . About 91% of the nurses had Bachelor's degrees or a higher level degree, and 8% of them had a diploma-level education. The nurses who were married comprised 37.4% of the total number of participating nurses. The average time spent working in the ICU was 8.75 ± 5.69 years. Ninety-one percent of the nurses had worked rotating shifts, 5.5% had worked night shifts, and 3.5% had worked on permanent day shifts. The most prevalent mental disorder in the nurses was social dysfunction (71.4%), and the least prevalent mental disorder was depression (10.7%). Among all of the nurses, 62.5% had anxiety symptoms, 60.7% had somatic symptoms, and almost 59% had a mental disorder. In order to examine the relationships between marital status, education level, and mental disorders, the score in each subscale were calculated, and, then, the independent samples t-test was used. The results indicated that the prevalence in all subscales of mental health in married nurses was greater than in the nurses who were not married, but this difference was not significant ($p > 0.05$). There were no significant differences between education levels and the mental health disorder subscales, such as anxiety ($p = 0.06$). Table 1 shows the prevalence of mental disorders and its subscales according to marital status and education levels. Somatic symptoms in nurses with diploma-level educations were higher (80%) than in the nurses with more advanced educational levels, but the other mental disorders were greater in the nurses with Bachelor's degrees or higher level degrees. All mental disorder subscales, except social dysfunction, were greater in nurses who worked night shifts than those who worked rotating shifts (Table 2).

Table 1. Prevalence of mental disorder subscales (%) according to marital status and education levels

Variables		Somatic symptoms	Anxiety	Social dysfunction	Depression	Mental disorders
Marital status	Single	40	60	66	6.7	40
	Married	68.3	63.4	73.2	12.2	65.9
Education levels	Diploma	80	20	60	0	40
	Bachelor's degree or higher	58.8	66.7	72.5	11.8	60.8

Table 2. Prevalence of mental disorders among nurses who worked different shifts

Shift status	Somatic symptoms	Anxiety	Social dysfunction	Depression	Mental disorders
Rotating shifts	58%	60%	72%	8%	58%
Fixed night shifts	66.7%	66.7%	33.3%	33.3%	66.7%

The findings showed that somatic symptoms had significant relationships with age and work experience ($p = 0.01$). There were no significant differences between somatic symptoms and working different work shifts ($p > 0.05$). Also, there were no significant differences between demographic features of the nurses and social dysfunction, anxiety, and depression as subscales of mental disorders ($p > 0.05$). High and moderate levels of occupational stress

were experienced by 83.9% and 10.7% of the nurses, respectively. For assessing the relationships between occupational stress with education levels and marital status, we calculated occupational stress scores and then used independent samples t-test to compare the two groups. Based on the results of the test, (Table 3), there were no significant differences between education levels and occupational stress ($p=0.22$). Occupational stress was higher in single nurses than married nurses, but the difference was not significant ($p=0.15$). Among married nurses, 7.3%, 9.8%, and 82.9% of them experienced low, medium, and high levels of occupational stress, respectively. Among single nurses, 13.3% and 86.7% of them experienced medium and high levels of occupational stress, respectively. The results of this study showed that the nurses on the fixed night shift experienced higher levels of job stress (84%) than the nurses on the rotating shifts (50%). Pearson's product-moment correlation test was used to evaluate the relationship between occupational stress and its subscales and the demographic features of the workers, and Table 4 provides the results. Working different shifts and work experience had significant effects on the nurses' interest in their jobs ($p < 0.05$). Pearson's product-moment correlation test was used to assess the relationships between mental health and occupational stress and their subscales. Table 5 shows that there was no significant correlation between depression and physical conditions.

Table 3. Relationship between occupational stress and education levels

Occupational stress	Education Level	Mean	SD	p-value*
Interpersonal relationships	Associate diploma	63.4	9.6	0.937
	B.Sc. or higher	62.88	14.15	
Physical condition	Associate diploma	73.2	10.28	0.932
	B.Sc. or higher	72.68	13.09	
Job interest	Associated diploma	31.40	5.27	0.503
	B.Sc. or higher	29.2	7.08	

*Independent samples t-test

Table 4. Relationships between demographic characteristics and occupational stress

Occupational stress	Working different shifts	Work experience (year)	Age (year)
Interpersonal relationships	0.107	0.104	0.08
Physical conditions	-0.012	0.016	0.109
Job interest	0.289*	0.315*	-0.158
Occupational stress	0.118	0.135	0.047

* Pearson's product-moment correlation test (Significant at $\alpha = 0.05$)

Table 5. Relationships between mental health and occupational stress*

Mental health	Interpersonal relationships	Physical conditions	Job interest	Occupational stress
Somatic symptoms	0.395	0.449	0.429	0.483
Anxiety	0.497	0.454	0.368	0.519
Social dysfunction	0.429	0.386	0.383	0.461
Depression	0.353	0.230	0.277	0.332
Mental disorders	0.539	0.500	0.471	0.853

*Pearson's product-moment correlation test (Significant at $\alpha = 0.05$)

4. Discussion

This study was designed to determine the prevalence of occupational stress and mental health problems in nurses who work in the ICU at Shahid Mohammadi Hospital in Bandar Abbas City in 2013 and also to determine the relationship between occupational stress and mental health. The results of the study indicated that the prevalence of somatic symptoms, anxiety, depression, and mental disorders in the nurses on the fixed night shift schedule was 1.15 to 4.16 times greater than that in the nurses who worked the fixed day shift (Table 2). This finding was in agreement with previous findings that showed a significant relationship ($p < 0.0001$) between mental disorders and shift work in nurses (13). The results of investigating the prevalence of mental disorders among hospital nurses in Japan indicated that mental disorders in nurses on the night shift or an irregular shift schedule (69.8%) were significantly greater than those in nurses who did not do shift work (55.6%) (13). The results of the assessment of mental disorders among nurses who do shift work in Shiraz using the GHQ-28 questionnaire showed that 45.4% of them

reported that they had experienced mental disorders. The most prevalent mental disorders in nurses who do shift work in the hospital in Shiraz were anxiety (43.2%) and somatic symptoms (34.5%). Also, the prevalence of depression and social dysfunction has been reported as 11.2 and 79.5% among nurses who do shift work (14). This study produced results that corroborate the findings of a great deal of the previous work in this field. The investigation of the relationship between occupational stress, general health, and burnout among the nurses in Tabriz's teaching hospitals revealed that 37.3% of the nurses suffered from significant mental health disorders, 30.5% from somatic symptoms, 62.7% from anxiety, 33.9% from social dysfunction, and 16.9% from depression (8). The results also indicated that the prevalence of the mental health problem in the married nurses who work in the ICU was considerably greater than that in single nurses (Table 1). The most prevalent mental disorder among married nurses was somatic symptoms, which were reported by 68.3% of the nurses. The results are consistent with the findings of other study that found that there was a significant difference between the nurses' marital status and depression and social dysfunction ($p < 0.001$) (14). The finding indicated that single nurses perceived greater levels of high (86.7%) and medium (13.3%) occupational stress than married nurses with lower levels of high (82.9%) and medium (9.8%) occupational stress. These results were in agreement with a previous study that showed higher levels of occupational stress in single nurses than married nurses (15). There was no significant relationship between occupational stress and working at different shifts. Also, there were no significant relationships between age, work experience, and working different shifts and interpersonal relationships and physical condition. Working different shifts and work experience had significant effects on the nurses' interest in their jobs. The results of another study showed that the schedule of shift work affected the levels of stress among workers (16). In this study, there was a significant relationship between job stress and mental health, which showed that job stress and mental disorders increased simultaneously. Pearson's product-moment correlation test showed a significant correlation between mental health and occupational stress and their subscales ($p < 0.05$) with the exception of the correlation between depression and physical conditions. Mental disorders in ICU nurses experienced moderate stress were 12.8 times greater than in the nurses who experienced low levels of stress. Mental disorders in nurses who experienced high levels of stress were 11.3 times greater than those who experienced low levels of stress. Therefore, the probability that nurses who work in the ICU will have mental disorders can be increased by increasing the levels of stress. This finding is in agreement with the findings of a previous study that showed a strong relationship between the development of mental disorders and occupational stress among nurses (17).

According to the high prevalence of job stress and low mental health among nurses who work in the ICU, the factors that cause tension in this setting must be identified and reduced. There was a significant relationship between stress and mental health, so it is suggested that a comprehensive health program be implemented in this field to reduce occupational stress and enhance the level of nurses' mental health so that the effectiveness and performance of the ICU can be improved. As suggested by other authors, training programs to enhance communication skills could be beneficial in improving basic/intuitive communication strategies (18); it seems apparent that providing training programs will help promote safety and improve health in the workplace (19). Since, all of the nurses who work in the ICU were female and differences in the perception of occupational stress among male and female workers (20) are likely to exist, it could be helpful to employ male nurses in this unit. A limitation of this study is that the number of nurses who participated in the study was relatively small. It is suggested that the association of these factors be investigated further in future studies.

5. Conclusions

One of the more significant findings to emerge from this study was that the prevalence of occupational stress among nurses who work in the ICU is high. There was a significant relationship between occupational stress and mental health. A significant correlation was reported between mental health and occupational stress and their subscales. These results can be used to establish policies for hospitals to promote the health and welfare of their staff members. Future interventions are needed to codify a comprehensive health program in this field to reduce occupational stress and enhance the level of nurses' mental health.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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